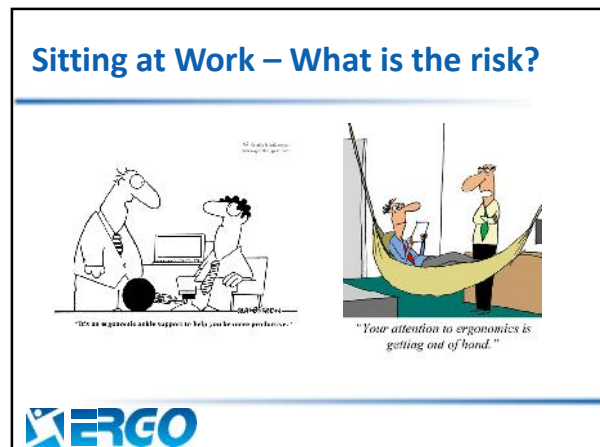
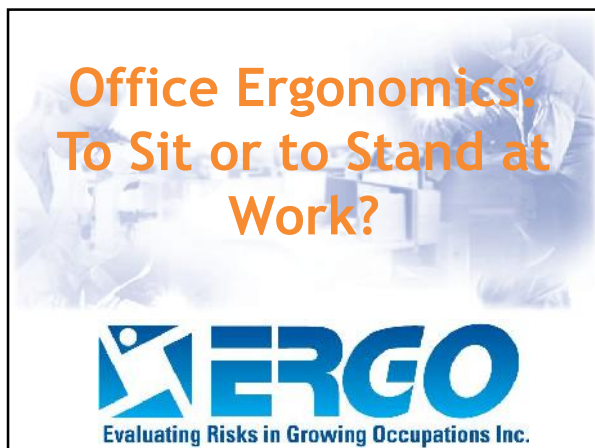


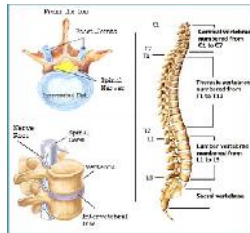
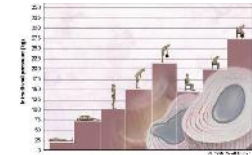
OFFICE ERGONOMICS – To Sit or to Stand at Work



OFFICE ERGONOMICS – To Sit or to Stand at Work

Sitting and the Spine

- The spine has four curves
- Ideal posture is to maintain the curves
- Minimize disc pressure
- Reduce risk of low back pain



Problems Associated with Sitting

- British Journal of Sports Medicine, Staiano et. al., August 2013
 - 4560 adults in 3-years study; self-reporting
 - Controlled: demographics, family history, diet, activity
 - RESULT:**
 - Health issues with prolonged sitting: waist girth, BMI, triglycerides, cholesterol
 - May contribute to premature mortality
- Journal of Medical Association, Hidde et. Al., March 2012
 - 222,497 adults in 4.75-years study; 45 years olds plus
 - Adjusted for sex, age, education, activity, BMI, smoking, disability
 - RESULT:**
 - Prolonged sitting risk factor for all-cause mortality
 - Sitting is an independent risk factor (regardless of physical activity)



Total Sitting vs. Occupational Sitting Time

- Total sitting time, Petersen, 2014
 - 71,363 individuals (Ages 18-99) in 5.4-year study
- Occupational sitting time, Moller, 2016
 - 11,996 individuals (Ages 21-69) in 19-year study
 - RESULT:**
 - Elevated risk for cardiovascular risk when total sitting time > 10 hours
 - No increased risk for cardiovascular risk with occupational sitting time



How long should you sit?

- Depends on method of sitting & posture
- Unsupported, static sitting should be changed more frequently
- MAXIMUM** continuous sitting time **60 minutes**
- The **LONGER** you sit → ↑ compressive forces on spinal discs
- Occupational Health & Safety Council of Ontario (OHSCO):
 - Prolonged sitting = > 6 hours total per day



6



Seating Options



"I love my ergonomic office chair. It reclines, has heated vibrating massage, and provides electro-shock therapy at the end of a stressful day!"



Fabric vs. Mesh Chairs

Fabric Chairs

- Increased adjustability
- Warmer
- More cushioning
- Longevity



www.ergocentric.com

Mesh Chairs

- May have less adjustability
 - simpler
- Cooler
- Encourages 'dynamic sitting'
 - Supported, moderate dynamic seating may assist in ↓ spinal loads & discomfort.
- Inexpensive may stretch



www.humanscale.com

(Peter Le & William S. Marras, 2016)



OFFICE ERGONOMICS – To Sit or to Stand at Work

The Ball Chair?

Implications?



What is Proper Seating?

A good office chair:

- Easy to adjust, intuitive
- Can be adjusted to fit
- Allows comfortable AND neutral position (avoiding slouching)
- Encourages alternative neutral postures; no single posture for entire day



What is Proper Seating?

\$1000 chair is not always the best

- Design must be sound
- User still required to customize adjustments properly



What Features are Required?

CSA Z412 -00 (2012) requirements:

- o Waterfall seat pan edge
- o Headrests
- o 5 star caster base
- o Armrests
- o Inflatable lumbar
- o Adjustable lumbar support
- o Seat pan depth
- o Seat pan height adjustability
- o Recline/tilt features



What Features are Required?

CSA Z412 -00 (2012) requirements:

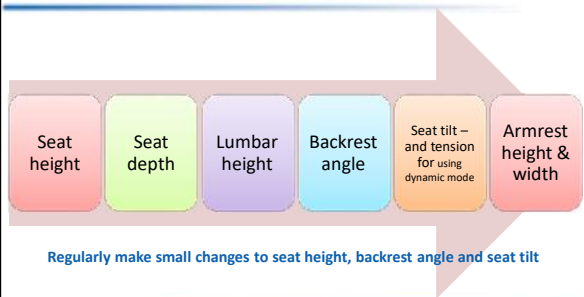
- ✓ Waterfall seat pan edge
- o Headrests
- ✓ 5 star caster base
- o Armrests
- o Inflatable lumbar
- ✓ Adjustable lumbar support
- o Seat pan depth
- ✓ Seat pan height adjustability
- o Recline/tilt features



Does an "executive chair meet these guidelines?



Learn the Controls & Adjust



OFFICE ERGONOMICS – To Sit or to Stand at Work

What About Just Standing?

PROS:

- ↓ compression on buttocks and thighs
- Closer to work tools
- More 'neutral' back and neck postures



What About Just Standing?

CONS:

- Poor venous return
- Swollen ankles & calves
- Can be more fatiguing
- ↑ heart rate and muscle work
- ↑ vessel thickness & blood pressure
- For some, faster onset of low back discomfort



What About Standing at Work & Caloric Uptake ?

Int J Obesity, C. Tudor-Locke et al., 2014

RESULT:

- Standing at work **DOES NOT** increase caloric uptake compared to sitting
- Evidence that sitting alternatives such as sitting on a stability ball or standing, do **NOT** generate a meaningful difference energy expenditure.

You would need to stand for approximately 6-7 hours to burn 1 can of Coke!



Prolonged Standing

What is considered prolonged standing?

- Occupational Health & Safety Council of Ontario (OHSCO):
 - Prolonged standing = > 4 hours total per day

Research to support this...

- ☑ Low back problems after standing more than 50% of work shift (Waters and Dick, Rehabilitation Nursing, 2015)
- ☑ 5 hours of standing induced lower extremity muscle fatigue, even with regular rest breaks (Garcia & Martin, Human Factors, 2016)



Best of Both Worlds: Sit-Stand Stations



Sit-Stand Stations

PROS

- Change posture whenever you choose
- Postural changes BEFORE onset of discomfort
- Preventative & proactive approach



OFFICE ERGONOMICS – To Sit or to Stand at Work

Sit-Stand Stations



CONS

- \$\$\$
- Lack of use
- Staff guess working height and may ↑ discomfort – need training for sit & stand
- Education needs increases if all elements have to be adjusted



Considerations when Moving to Sit-Stand Stations

- ☑ Individual pre-existing risk factors & health conditions
 - Needs vs. want
- ☑ Cognitive demands
 - Complex work easier in sitting
- ☑ Physical tasks that need to be performed
 - e.g. Writing more difficult when standing
- ☑ Social aspects
 - Privacy
 - Self-consciousness
 - Footwear (flats, heels)



Guidelines for Standing at Sit Stand Workstations

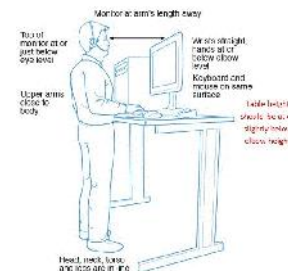
☑ Sitting Duration: 30-60 minutes; <6 hours total/day

☑ Standing Duration: No longer than 20 minutes at a time

- Pain/discomfort shown to start between 30-40 minutes
- Want to make change in posture before pain starts
- <4 hours total/day
- Start with 1 hour/day and slowly increase



Setting up your “Stand” Station



Considerations Before Purchasing

- ☑ Budget
- ☑ 4 S's
 - Speed, Sound, Stability, Style
- ☑ Product application
 - Type of work (# monitors, paperwork)
 - Size/height of employees, range of height required
- ☑ Changes in technology & tools
 - Ensure furniture will work with future technology & tools



Sit Stand ‘Cheap’ Options

- ☑ Use a sturdy but lightweight box to support your keyboard and mouse at elbow height
- ☑ Tilt monitor into a fully open position or monitor on a box
- ☑ Cardboard fold outs
- ☑ Problems – frequent lifting of tools and boxes, storage of boxes, stability of equipment, not height adjustable



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Sit Stand 'Modify' Options

- ❑ Add monitor arm
 - Cost? Start in the \$100s and more
- ❑ Adjustable height keyboard tray
 - Ensure adequate range to elbow height when standing
 - Cost? \$175 and up just for keyboard arm
- ❑ Scissor lift platform
 - 7 heights, up to 9.25"
 - Suitable for shorter employees
 - Cost: \$300



Sit Stand 'All-In-One' Options

- ❑ Add-ons to desk keep continuity between keyboard/mouse and monitor



Ergotron WorkFit-S Varidesk TaskMate EZ Humanscale Quick Stand Dual Kangaroo free-standing desk unit



from www.ergoconsulting.ca

Preferred Option

- ❑ Fully adjustable work surface is optimal
- ❑ Optimizes height for sitting and standing
- ❑ Allows frequent and easy height changes
- ❑ Continuity between keyboard & monitor height is maintained
- ❑ Better for jobs with high volumes of paperwork
- ❑ Hydraulic desks often quieter than electric



Height Adjustable Desk Options

- ❑ Float by Humanscale
 - Various sizes – 48-72 inches wide
 - Height adjustment range 20 inches
 - Support over 130 lbs.
 - Easy to adjust - counterbalanced
 - No leg obstructions
 - \$2000
- ❑ Ikea Bekant
 - A few shapes and sizes
 - 22-48 inch height range
 - \$529



Effectiveness of Sit Stand Workstations

- ❑ Novelty wears off
- ❑ Only increases standing for 50-70 min/day
- ❑ Not tolerated by most people for longer than 60 minutes
- ❑ Many "healthy" employees will not use unless they understand the benefits
- ❑ Can not just "implement" without education and follow up and expect "proper & ideal" usage



Improving Use of Sit Stand Workstations

- ❑ Education
 - How to adjust station
 - How often to stand & for how long
- ❑ Follow-up
 - Ensure there are no issues with the equipment
 - Ensure the worker has not developed pain from standing
- ❑ Ongoing training
 - Provide regular reminders
 - Implement tracking system to improve compliance



OFFICE ERGONOMICS – To Sit or to Stand at Work

Walking & Working



Maybe just go outside for a walk?



In Summary

Sitting too long is not ideal, but neither is standing too long

Ultimate solution....

— Get up and move around



Tips for Incorporating Movement



Thank you for attending, please stay in touch

✓ Join our BLOG



✓ Get Ergonomic Updates, Newsletters, ERGO Tips

✓ Register for 1-Day Public Ergonomic Certificate Workshops or Online Ergonomic Webinar Series

✓ Hire an ERGO Inc. Ergonomist



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Questions?



Thank you for attending!



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"Healthy Workers add up to Healthy Profits"